Ammonium Sulfate Conversion Feasibility Study
At Intermountain Power Plant

Action Items
Status as of March 2000

The following is a summary of the identified action items:

A. Tech Issues:

Outstanding:

d) Determine if there is an increase in pyrites fires in the pulverizers relating to burning pet coke. If so, what will be the effect on plant operating cost? Will it result in more fires in the mill or burner lines?

e) Air Heaters: Will the ash from the pet coke - coal blend stick to the air heater baskets? Will it leave an oily film on the baskets or any other gas path part?

f) Gas Path Corrosion: The higher sulfur content in the pet coke is likely to affect corrosivity of the flue gases on metal surfaces in the gas path.

g) CEMS Equipment: If SO2 scrubber inlet flue gas concentrations potentially could ever go above 1000 ppm, we will need to buy new Continuous Emissions Monitoring Equipment (CEMS) and modify our CEMS software.

h) Flue Gas Leaks in Scrubber Building: SO2 flue gas leaks into the scrubber building will be more of a safety concern at the higher flue gas SO2 concentrations. Ammonia Storage: On site ammonia unloading and storage are serious safety and environmental concerns. Especially considering the amount of ammonia required and the amount of on site storage required. (Also Fugitives)

i) Equipment Redundancy: Design of the whole process must include enough redundant equipment to guarantee unit availability.

j) Fly ash in Scrubbers: Will fly ash particles removed in the scrubbers adversely affect the ammonium sulfate scrubbers?

k) Ammonia Gas Leaks: Ammonia gas leaks in the scrubber buildings will be an added safety concern and will most likely require monitoring in the buildings, similar to SO2 and NOx monitoring.

l) Corrosion Protection: We need to review the potential affects of ammonia, ammonium sulfate and ammonium hydroxide corrosion on scrubber and stack components, particularly; mild steel, FRP (mist eliminators), chlorobutyl rubber (pipes), fiberglass (stack), stainless steel, hastalloy, and some existing chemical coatings.

m) Ammonia Slip: The amount of ammonia slip, resulting in stack releases of ammonia and ammonia compounds, will ultimately need to be quite accurately determined. An NOI to the State to modify our discharge permit (as part of the operating permit) may need to be submitted, depending on the amount that we have the potential to emit. If an NOI is required, it could again trigger an NSR review.

n) Granulizer Maintenance: We do not have a good feel on the cost of operating and maintaining an ammonium sulfate granulizer. We need to visit some sites and discuss this with others in the business who have some experience.

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o) Handling of Spherical Shaped Pet Coke. There is some concern that the spherical shaped pet coke will slide down the steeper sloped belts (Should note this during phase II test burn).
p) Baghouse Differential Pressure: Will the pet coke result in higher baghouse differential pressures either from reduced particle sizes or higher LOIs (Should note this during phase II test burn).
q) Determine annual quantity, sources and and price of DBA required (Jonas)
a) Identify potential sources for steam and hot water and identify locations for each (IPSC)
b) Investigate & study alternative heating sources as well as the effect on heat rate(Jonas)
c) Check and see if scrubber performance test has data on Chloride, HF, & HFL slip (Rand)
c) Coordinate installation of NOSIS (Jonas/Jerry Hintze)

B. Fuels issues:

Outstanding:

a) Plan the phase II test burn procedure. Determine length of phase II test burn. (Jerry Hintze/Radian)
b) Execute petcoke agreement for petcoke for phase II test burn.
c) Initiate review of backhaul opportunities and initial pricing info (IPA & Radian)
d) Fugitive Dust: Note and observe petcoke for fugitive dust. (Additional equipment or operating expenses may be necessary to control fugitive dust.)
e) Pile Storage: Determine spontaneous combustion properties of pet coke. How will we need to store it and how long will it store at different compaction, etc?
f) Fly ash Sales and Disposal Cost: Burning pet coke may likely preclude selling our ash as a cement additive and we will lose that revenue. We will retain some disposal expenses Fly ash Disposal.
g) Railcar Availability: Railcar availability issues still need to be addressed. Can we reliably get cars and power, can they get timely loading and what is the timing from distant sources? Deliveries may also be affected by back haul opportunities
h) Unloading Frozen Trains: Long haul of pet coke will make unloading in the winter more difficult, especially if Pet coke comes from Minnesota or other northern areas.

C. Ammonium Sulfate Issues:

Outstanding:

a) Continue AS market assessment (Leslie)
b) Determine if other States have a product quality specification and if so, what are the specifications (Leslie, 10/4/99)

D. Anhydrous Ammonia Issues:

Outstanding:

a) Review the Risk Management Plan for changes regarding anhydrous ammonia (IPSC, Due Date)

b) Urea as Ammonia Storage: Is there any industry experience with the long-term storage of urea? Will the equipment be ready if needed considering that it will only used infrequently? Is this process widely used around the country?

c) Determine how long linestone system should remain active as a back-up to the Ammonia system.(Jonas)

d) Ammonia Availability: What is the long-term availability of anhydrous ammonia and of the rail cars? We will need quite a few high-pressure tanker cars and power, and they must be scheduled from distant sources. Deliveries will have to be coordinated around coal and pet coke trains.

E. Permit Issues:

Outstanding:

a) Revise NOI to reflect the phase II test turn in mid-May (Lance Brown)

a) Determine all new equipment to be added to the facility as a result of the modifications; no other action items for this task until petroleum coke has been analyzed (Bill Horton)

b) Determine if there are any landfill issues – there don't appear to be any (Rand Crafts)

i) We will have to re-permit the landfill for disposal of fly ash mixed with just water.

F Other Items

Outstanding:

a) Produce first project overall $ estimate (Radian)

b) Identify O&M increases and decreases (Jerry Hintze)

c) Arrange for AS plant tour (Jonas)

d) Arrange for tour of plants currently burning coal/pet coke blend (Jonas)

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